UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
ADDRESS: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/400,492	09/21/1999	KENNETH RHODES	MNI-069CP	3470

959 7590 03/12/2002

LAHIVE & COCKFIELD
28 STATE STREET
BOSTON, MA 02109

EXAMINER	
MURPHY, JOSEPH F	

ART UNIT	PAPER NUMBER
1646	

DATE MAILED: 03/12/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/400,492	RHODES FT AI	
	Examiner	Art Unit	
	Joseph F Murphy	1646	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 January 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,11,12 and 15-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,11,12 and 15-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Formal Matters

Claims 4-10, 13 and 14 were cancelled, and claims 1-3, 11-12 and 15-16 were amended, and new claims 17-23 were added in Paper No. 12, 1/7/2002.

Response to Amendment

The objection to claims 1-3, 11-12 and 15-16 has been withdrawn based on Applicant's amendment.

The rejection of claims 1-3, 11-12, 15-16 under 35 USC 112, first paragraph as not reasonably provide enablement for a method of identifying a compound suitable for treatment wherein the polypeptide is a fragment of PCIP 9q, has been obviated by Applicants amendment, and is thus withdrawn.

Claim Rejections - 35 USC § 112 first paragraph

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The rejection of claims 1-3, 11-12, 15-16 has been applied to new claims 17-23, which are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a method of identifying a compound suitable for treatment wherein the PCIP is 9q, does not reasonably provide enablement for a method of identifying a compound suitable for treatment wherein the polypeptide is a fragment of PCIP 9q, for reasons of record set forth in Paper No. 11,

8/9/2001. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

The rejection of record argues that the indicated claims are overly broad in the recitation of "fragments". There is not adequate guidance as to the nature of the fragments which Applicants claim. There is insufficient guidance provided in the specification as to the relationship between the structure of PCIP 9q and its function. Without this information, it would require undue experimentation for one of skill in the art to practice a method of identifying a compound suitable for treatment wherein the polypeptide is a fragment of PCIP 9q.

Applicant has added the limitation "biologically active" to attempt to better define the function of the fragments of PCIP 9q. There is insufficient guidance as to the nature of the fragments which Applicants claim. There is insufficient guidance provided in the specification as to the relationship between the structure of PCIP 9q and its function. Without this information, it would require undue experimentation for one of skill in the art to practice a method of identifying a compound suitable for treating a cardiovascular disorder comprising contacting a biologically active fragment of 9q PCIP, other than that which is exemplified in the specification.

Claims 17-23 are directed to a method of identifying a compound suitable for treating a cardiovascular disorder comprising contacting a biologically active fragment of 9q PCIP. In the specification (page 18, lines 35-36), Applicants disclose that biologically active fragments of the PCIP protein can be identified by a method used for determining direct binding, without disclosing any actual or prophetic examples on expected performance parameters of any of the possible fragments of PCIP 9q.

However, it is known in the art that even single amino acid changes or differences in the amino acid sequence of a protein can have dramatic effects on the protein's function. There is insufficient guidance provided in the instant specification as to how one of ordinary skill in the art would practice a method of identifying a compound suitable for treating a cardiovascular disorder comprising contacting a biologically active fragment of 9q PCIP. See In re Wands, 858 F.2d at 737, 8 USPQ2d at 1404. The test of enablement is not whether any experimentation is necessary, but whether, if experimentation is necessary, it is undue. The Wands Court set forth eight factors to consider in the determination of whether a disclosure does not satisfy the enablement requirement and would require undue experimentation. The relevant factors in the instant case are set forth below:

(1) the nature of the invention - the claimed invention is a method of identifying a compound suitable for treating a cardiovascular disorder comprising contacting a biologically active fragment of 9q PCIP.

(2) the state of the prior art - it is known in the art that even single amino acid changes or differences in the amino acid sequence of a protein can have dramatic effects on the protein's function. For example, Mikayama et al. (1993) teaches that the human glycosylation-inhibiting factor (GIF) protein differs from human migration inhibitory factor (MIF) by a single amino acid residue (page 10056, Figure 1). Yet, despite the fact that these proteins are 90% identical at the amino acid level, GIF is unable to carry out the function of MIF, and MIF does not exhibit GIF bioactivity (page 10059, second column, third paragraph). It is also known in the art that a single amino acid change in a protein's sequence can drastically affect the structure of the protein and the architecture of an entire cell. Voet et al. (1990) teaches that a single Glu to Val substitution

in the beta subunit of hemoglobin causes the hemoglobin molecules to associate with one another in such a manner that, in homozygous individuals, erythrocytes are altered from their normal discoid shape and assume the sickle shape characteristic of sickle-cell anemia, causing hemolytic anemia and blood flow blockages (pages 126-128, section 6-3A and page 230, column 2, first paragraph).

(3) the level of one of ordinary skill the Mikayama and Voet disclosures is evidence that one of ordinary skill in the art would have difficulty practicing the claimed method.

(4) the level of predictability in the art - the Mikayama and Voet references are evidence that the level of predictability in making making functional protein fragments is low.

(5) the amount of direction provided by the inventor - the specification has provided insufficient guidance to practice a method of identifying a compound suitable for treating a cardiovascular disorder comprising contacting a biologically active fragment of 9q PCIP.

(6) the existence of working examples - no working examples are provided.

(7) the quantity of experimentation needed to make or use the invention based on the content of the disclosure - Given the disclosure of Mikayama and Voet, it would require undue experimentation to practice a method of identifying a compound suitable for treating a cardiovascular disorder comprising contacting a biologically active fragment of 9q PCIP.

There is insufficient guidance provided in the specification as to how one of ordinary skill in the art would to practice a method of identifying a compound suitable for treatment wherein the polypeptide is a fragment of PCIP 9q other than those exemplified in the specification.

Claim Rejections - 35 USC § 112 second paragraph

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-3, 11-12 and 15-16 stand rejected, and new claims 17-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 17-23 are indefinite in the recitation of the term "biologically active fragment". The term "biologically active" is not defined by the claim. Various biological activities can be attributed to a peptide. For example, "activity" could constitute transportation throughout a cell, alteration of tertiary structure due to changes in pH, ligand binding, or modulation of second messenger effect, etc. 'Activity' could also be referring to the ability of the fragment to stimulate antibody production, therefore, the metes and bounds of these claims cannot be determined.

Claims 1-3, and dependent claims 11-12 and 15-16, as well as new claims 17-23, are indefinite in that they only describe the peptide of interest by an arbitrary protein name, I.e. "PCIP". There is nothing in the claims which distinctly identifies the protein. For example, others in the field may isolate the same protein and give said protein an entirely different name. Applicant should particularly point out and distinctly identify the polypeptide by claiming structural characteristics associated with the protein (e.g. amino acid sequence, molecular weight, etc.). Identification of biochemical molecules by a particular name given to the protein by various workers in the field fails to distinctly designate what that protein is.

Applicant argues that the term PCIP is defined in the specification. However, PCIP is an art used term, and its use in the claims without any further clarification is ambiguous. As

evidence, see Oberste-Berghaus et al. Thyroid Hormone-independent Interaction between the Thyroid Hormone Receptor β2 Amino Terminus and Coactivators. Journal of Biological Chemistry. Vol. 275, No. 3, Issue of January 21, pp. 1787–1792, 2000, which uses the term pCIP to refer to a thyroid hormone coactivator (abstract).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The rejection of claims 1-3, 11-12 and 15-16 has been applied to claims 17-23 which are rejected under 35 U.S.C. 102(b) as being anticipated by WO 9731112 (Li et al.).

WO 9731112 discloses a method of identifying compounds that bind the NAB region of the α subunit of Shaker potassium channels (page 6, line 32 to page 7, line 9). The disorders which may be treated by the compounds identified through the use of this method include, inter alia, cardiac disease, cardiac arrythmias and cardiac dysrhythmias (page 4, line 4). Since the Shaker α subunit NAB region protein comprises "fragments" of the PCIP 9q of the present invention, the claims are anticipated. The Shaker α subunit NAB region is biologically active. Thus all the claim limitations are met.

Conclusion

No claim is allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Advisory Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph F. Murphy whose telephone number is 703-305-7245. The examiner can normally be reached on M-F 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yvonne Eyler can be reached on 703-308-6564. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3014 for regular communications and 703-308-0294 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0196.

Joseph F. Murphy, Ph. D.
Patent Examiner
Art Unit 1646
March 4, 2002

DAVID S. ROMEO
PRIMARY EXAMINER